

# BRAIN PRESERVATION

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## BRAIN PRESERVATION,

WITH A RÉSUMÉ OF SOME OLD AND NEW METHODS.

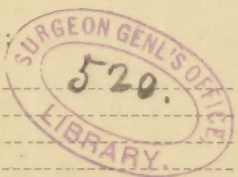
In the Wilder Quarter-Century Book, Mr. PIERRE A. FISH, of Ithaca, N. Y., instructor in Cornell University, reviews the subject of brain preservation from the time of the ancient Egyptians down to the present, including some original observations by the author.

To a Hollander, Frederic Ruysch, belongs the honor of first having been able to preserve the brain as a whole. His formula was not divulged however, and the secret of his success died with him. Reil's method was also applicable for the preservation of the brain *in toto*. The reagents commonly employed for the preservation and hardening of nerve tissues for microscopical purposes are enumerated with comments on their adaptability and success. In preserving the brain as a whole some fluid is necessary of about the same specific gravity as the brain itself, replacing gradually the natural fluids of the tissue with a simple fluid, or with a solution of some salt of equal density, and not markedly changing the natural color or size of the specimen.

After considerable study and experimenting, a fluid was devised, which, though not ideal in its effects, seems to answer the requirements of economy, fixation of the structural elements, differentiation of tissue, a minimum amount of distortion, firmness of texture, and rapidity of action.

The formula is as follows:

|                           |           |
|---------------------------|-----------|
| Water.....                | 400 c. c. |
| 95 per cent. Alcohol..... | 400 c. c. |
| Glycerin.....             | 250 c. c. |
| Zinc chlorid.....         | 20 grams. |
| Sodium chlorid.....       | 20 grams. |



The specific gravity of the mixture should be about 1.04, a little greater than that of the brain itself (1.038). The slightly greater density of the fluid is believed to be more advantageous than otherwise, since it buoys the brain until the tissue has begun to harden and can partially support its own weight. The pressure is nearly



enough equal on all sides to prevent any noticeable change of form. It is recommended that the cavities of the brain be filled with the mixture (coel injected) and if practicable the blood-vessels also injected. After an immersion of about three days the specimen should be transferred to equal parts of the foregoing mixture and seventy per cent. alcohol for a week or more, where on account of the lesser specific gravity it should rest upon a bed of absorbent cotton; it is finally stored in ninety per cent. alcohol.

*Dry Preparations.*—After dehydration in repeated changes of ninety-five per cent. alcohol, immerse the brain in a mixture of:

|                 |          |
|-----------------|----------|
| Turpentine..... | 3 parts, |
| Castor oil..... | 1 part,  |

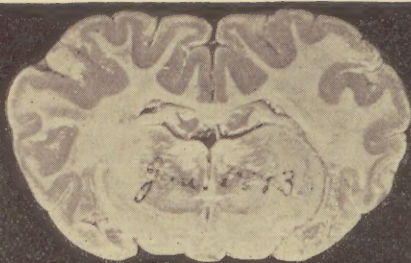
until it becomes tolerably translucent (one or two weeks) changing the solution if it becomes cloudy; then transfer to pure castor oil for a week or two. Allow it to drain on a layer of cotton covered with absorbent paper until the surface dries and then paint it over a few times with an alcoholic solution of bleached shellac. The specimen soon becomes firm and requires no special attention when once it has become dry. This process differentiates alba and cinerea well. (See Plate). The brain sections or dissections should be made before immersing in the turpentine-oil mixture. It will be found that the alba becomes translucent first; the preparation at this particular stage may then be put into the pure castor oil until thoroughly penetrated and subsequently drained and shellaced. The castor oil may be used repeatedly and costs only one-half as much as glycerin. Some shrinkage occurs, the dry specimen losing about one-fourth of its volume after it has left the liquid.

#### DESCRIPTION OF PLATE.

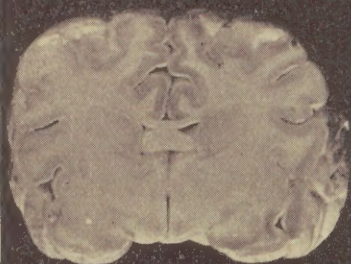
All of the figures are at about the natural size of the dry specimens, which were prepared according to the castor oil method.

The transections show differentiation of the alba and cinerea.

Fig. 1 and 6 are from the sheep, *Ovis aries*. Fig. 2 and 5 are from the dog, *Canis familiaris*. Fig. 3 is the mesal view of the right hemicerebrum of a monkey, *Macacus rhesus*. Fig. 4 is the lateral aspect of the right hemicerebrum of *Macacus cynomolgus*.



1



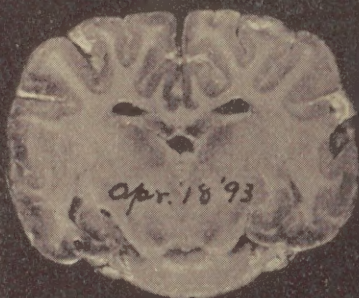
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3



4



5



6







